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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,731	10/12/2001	Leilei Song	3	2455

7590 04/19/2005

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EXAMINER

TORRES, JOSEPH D

ART UNIT	PAPER NUMBER
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2133

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/976,731

Applicant(s)

SONG, LEILEI

Examiner

Joseph D. Torres

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2005.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 25 and 26 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-4, 7-10, 25 and 26 is/are rejected.
7) ☒ Claim(s) 5 and 6 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 26 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-10, 25 and 26 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 7, 8, 25 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Noguchi; Nobuaki (US 6611939 B1).

35 U.S.C. 102(e) rejection of claims 1, 25 and 26.

Noguchi teaches determining if an actual number of errors is less than a maximum error correction capability (Figure 2 in Noguchi teaches determining if uncorrectable errors exist and flagging the uncorrectable errors with flags, UNC(A1), UNC(B1), UNC(A2) & UNC(B2), i.e., if $UNC(A1)=0$ there are no uncorrectable errors with respect to the A1 decoding and the actual numbers are below the maximum error correction capability of

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the A1 decoding, if $UNC(B1)=0$ there are no uncorrectable errors with respect to the B1 decoding and the actual numbers are below the maximum error correction capability of the B1 decoding, if $UNC(A2)=0$ there are no uncorrectable errors with respect to the A2 decoding and the actual numbers are below the maximum error correction capability of the A2 decoding & if $UNC(B2)=0$ there are no uncorrectable errors with respect to the B2 decoding and the actual numbers are below the maximum error correction capability of the B2 decoding); and performing error correction in a reduced power mode in a decoder of the error correction system when the actual number of errors is less than the maximum error correction capability (Step S3 in Figure 2 of Noguchi teaches that when $UNC(A1)=0$, i.e., the actual numbers are below the maximum error correction capability of the A1 decoding correction is terminated; Note: the abstract in Noguchi teaches that error correction is terminated to reduce power consumption; hence Noguchi teaches performing error correction in a reduced power mode in a decoder of the error correction system when the actual number of errors is less than the maximum error correction capability, that is; when $UNC(A1)=0$).

35 U.S.C. 102(e) rejection of claim 2.

See col. 10, lines 36-44 in Noguchi. Note: The Authoritative Dictionary of IEEE Standards Terms defines gating as the application of inhibiting pulses during part of a cycle of equipment operation; hence stopping a clock as taught in col. 10, lines 36-44 of Noguchi is a means for gating.

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35 U.S.C. 102(e) rejection of claims 7 and 8.

Col. 7, lines 1-5 in Noguchi teaches that SYN(A1), SYN(B1), SYN(A2) & SYN(B2) are flags and are set to 0 if all the syndromes for the respective decodings are zero.

Syndrome calculation means 11 in Figure 1 of Noguchi is a means for determining a number of syndromes. Flagging the B1 decoding using the SYN(B1) flag is a means for determining if all the syndromes have the predetermined value of zero or not. Figure 2 in Noguchi teaches that whenever SYN(B1)=0 and UNC(A1)=0, correction is terminated thereby reducing power.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 3, 4, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi; Nobuaki (US 6611939 B1) in view of Cameron; Kelly (US 5099482 A).

35 U.S.C. 103(a) rejection of claims 3 and 9.

Noguchi substantially teaches the claimed invention described in claims 1, 2, 7 and 8 (as rejected above).

However Noguchi does not explicitly teach the specific use of the particular elements of a decoder for Reed-Solomon codes nor does Noguchi teach how an uncorrectable error is determined.

Cameron, in an analogous art, teaches use of the particular elements of a decoder for Reed-Solomon codes and how an uncorrectable error is determined from intermediate polynomials (Note: the Abstract in Cameron teaches that the test for uncorrectable errors comprises determining if the degree of the Error Locator Polynomial $\Lambda(x)$ and the degree of the Error Magnitude Polynomial $\Omega(x)$ are less than predetermined values).

Note: Noguchi teaches general syndrome based error correction codes, which include Reed-Solomon codes whereas Cameron explicitly focuses on a specific type of syndrome based code, i.e., Reed-Solomon codes. Note: one of ordinary skill in the art at the time the invention was made would have been highly motivated to use a Reed-Solomon code since Reed-Solomon codes form the core of the most powerful known algebraic codes.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Noguchi with the teachings of Cameron by including use of the particular elements of a decoder for Reed-Solomon codes. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was

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made, because one of ordinary skill in the art would have recognized that use of the particular elements of a decoder for Reed-Solomon codes would have provided the opportunity for using one of the most powerful known algebraic codes.

35 U.S.C. 103(a) rejection of claim 4.

Each of the A1, B1, A2 and B2 decoding require separate calculation and distinct Error Locator Polynomial and Error Magnitude Polynomial.

35 U.S.C. 103(a) rejection of claim 10.

If the Syndromes are not all zero, error correction circuitry is enabled to correct errors.

Calculating error polynomials is a required step for decoding Reed-Solomon codes.

Allowable Subject Matter

4. Claims 5 and 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

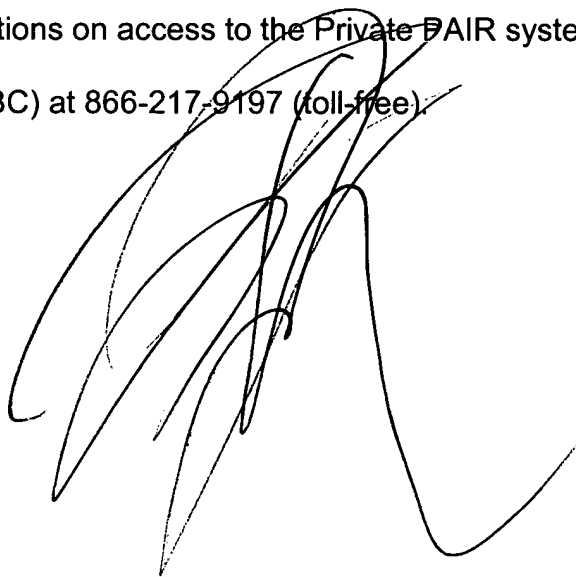
Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A large, stylized handwritten signature in black ink, appearing to read 'J. Torres', is written over the text of the paragraph.

Joseph D. Torres, PhD
Primary Examiner
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